AYK REGION
SALMON SUBSISTENCE
REPORT # 9

SUBSISTENCE FISH UTILIZATION IN THE YUKON-KUSKOKWIM DELTA 1977

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Subsistence Fish Utilization in the Yukon-Kuskokwim Delta

Introduction

The people of the Yukon-Kuskokwim Delta still rely heavily upon the renewable natural resources of the area for their subsistence. Fish, especially salmon, are the most important source of food for the people and their dogs.

The Alaska Department of Fish and Game has monitored the subsistence utilization of salmon since Statehood in 1959. Compiled information from the Yukon and Kuskokwim Rivers is presented in Appendix Tables 1 and 2.

Other species of fish also play an important part in the subsistence food use pattern chain of the people. To document some of this utilization, the Department of Fish and Game has conducted surveys of the utilization of non-salmon species of fish. These surveys have not been as systematic as those done to determine salmon utilization. This report presents catch information obtained from a few villages on the Yukon and Kuskokwim Rivers.

Methods

The method employed to obtain the number of fish harvested is basically the same for salmon and non-salmon species. A "catch calendar" is issued to every family, whether they fish or not. The calendar is a monthly form that the fisherman can use to enter his daily catch. The salmon season calendar, see Figure 2, June through September, are mailed in April or May. Catches for the months of June and July are collected during the August subsistence survey of the river fish camps by a Department of Fish and Game crew. The people are requested to drop the calendars for the months of August and September in the mail. Because voluntary compliance with this program has been so successful; better than 70%, the data obtained for salmon utilization is good. It was found that an extension of this type of a calendar program throughout the year was not nearly as successful. Apparently the people become tired of "government studies".

The best results were obtained by hiring local people to issue and retrieve the month's calendar on the first of every month. This person was paid by the number of completed calendars he turned in. This way the person had the incentive to get all of the village's calendars. Also at the time he picked up the calendar he could determine if all the month's catch was entered, and reinforce the need for entering all the catch.

The feeling that the results are accurately represented is reinforced by the reporting by the fishermen when their nets or taluyuks get frozen into the ice and when and if they chop the nets out in the spring. In a few instances even the number of rotten fish are reported. These fish were spoiled because of being in the net more than a week.

Results and Discussion

Fish is extremely important and is the major food source for the people of the Yukon-Kuskokwim Delta. The data, Tables 2 - 7 and Appendix Table 1, indicate that roughly two metric tons (4,400 pounds) of fish are harvested by every native family in the region. About 75% of this harvest is salmon.

It is difficult to draw general conclusions from the results because of the small size of the sample and the changing situations that occur that influence the incentives for fishing.

It appears that if plenty of salmon are prepared during the summer, then the winter effort is reduced, especially in the placing of gill nets under the ice. Gill nets are set when the ice is thin and seldom if ever are set when the ice gets much more than a foot and a half deep. If the people start running short of dried salmon during the winter, then they fish in the spring pike fishery more intensively. If spring weather in March and April has some nice days and if other fishermen have good fishing, then more people will go fishing. If spring fishing has been good and especially if a few dried salmon are still in the cache, then the salmon effort is reduced in the summer. If the cache is not full in the fall because of reduced effort, then there is more effort in early winter to catch more fish and to put out gill nets. Once a net is set under the ice, it generally is checked often, either by its owner or by someone who needs fish under agreement with the owner. When fishing slows in mid winter and the nets are not checked, they tend to freeze in the ice. Surveys conducted in March have shown 35 to 55% of the nets on the Kuskokwim River have not been checked for at least a month. Most of these nets are frozen in and will go out with the ice during break-up in the spring. A few of these frozen in nets will be dug out when the ice starts to melt in late spring. In Napaskiak in 1972, 41% (13 of 32) of the nets were frozen in.

When a gill net freezes into the ice, it is generally only the cork line at one end that first freezes in and prevents its removal. As the ice thickness increases more of the net is in the ice, but never does the whole net get frozen so that it can not catch fish. The average gill net is about six feet deep, so that at most only the top two or so feet of the net are in the ice.

When a taluyuk, a small single funnel fish trap, gets frozen in or is abandoned it continues to catch fish, mink, and muskrats until it rusts out or is reclaimed the next fall. Fewer taluyuks than gill nets get frozen in or abandoned, but it is a very wide spread problem.

Fish, and all other resources, are harvested when available. This type of "binge" harvesting often causes large quantities of the resources to be taken when available. Most of the time this traditional harvest is done at a time or in a manner when conditions, generally climactic, will allow the harvest to be processed, stored, or utilized before it spoils. Under some conditions, a large portion of the harvest will spoil. This often occurs because harvesting was so good that more than could be used was taken or because during the winter when the catch is preserved by freezing, an extended warm spell occurs. These warm spells occur every winter and the temperatures will reach 5°C (40° F) accompanied by rain. If these warm spells last more than a week or so, the fish stored outside and unprotected or in the cache will spoil.

TABLE 2, NAPASKIAK FISHERY UTILIZATION, 1972 - 1973.

	1972			1973	
	1 Jan to 30 May	1 June to 30 Sept	1 Oct to 31 Dec	1 Jan to 30 May	1 June to 30 Sept
Village Family Data					
Number of Families	41	41	41	40	40
Salmon fishing/sharing		37			33
Non-salmon fishing	36		33	33	
Non-fish harvester	1	1	1	1	1
People per family		5.67			5.62
Dogs per family		2.85			2.62
Sno-gos per family		1.19			1.03
Fish Harvest					
King Salmon, number 1/		1,530			2,292
weight, kg		17,142			27,753
(pounds)		(37,791)			(61,196)
Small Salmon, number 1/		8,572			9,474
weight, kg		25,332			29,222
(pounds)		(55,848)			(64,423)
Whitefish, number	2,354		1,897	1,009	
weight, kg 3/	2,990		2,409	1,281	
(pounds)	(6,591)		(5,312)	(2,825)	
Sheefish, number	205		113	51	
weight, kg 3/	698		395	173	
(pounds)	(1,538)		(848)	(382)	
Pike, number	1,381		223	5,877	
weight, kg 3/	1,253		207	5,339	
(pounds)	(2,762)		(456)	(11,754)	
Burbot, number	538		1,011	73	
weight, kg 3/	1,098		2,064	149	
(pounds)	(2,421)		(4,550)	(328)	
Blackfish, 2/					
weight, kg	498		634	194	
(pounds)	(1,097)		(1,398)	(427)	
TOTALS, kg	6,536	42,474	5,699	7,129	56,980
(pounds)	(14,409)	(93,639)	(12,564)	(15,716)	(125,619)
Fish Utilization Per Family, kilograms	159	1,036	139	178	1,424
(pounds)	(351)	(2,284)	(306)	(392)	(3,140)

1/ Expanded data.
2/ Measured in pounds or volume only.
3/ Estimated weights: whitefish 1.27kg; Sheefish 3.40kg; pike 0.90k
burbot 2.04kg.

TABLE 3. OSCARVILLE FISHERY UTILIZATION, 1972.

	1972		
	1 Jan to 30 May	1 June to 30 Sept	1 Oct to 31 Dec
Village Family Data			
Number of Families	13	13	13
Salmon fishing		8	
Non-salmon fishing	10		3
Non-fish harvester	3	3	3
People per Family	4.38	4.38	
Dogs per family		1.77	
Sno-gos per family		0.46	
Fish Harvest			
King Salmon, number 1/		224	
weight, kg		2,510	
(pounds)		(5,510)	
Small Salmon, number		569	
weight, kg		1,678	
(pounds)		(3,698)	
Whitefish, number	496	7	183
weight, kg 3/	630	9	232
(pounds)	(1,389)	(20)	(512)
Sheefish, number	57		29
weight, kg 3/	194		99
(pounds)	(428)		(218)
Pike, number	360		
weight, kg 3/	327		
(pounds)	(720)		
Burbot, number	147		230
weight, kg 3/	300		469
(pounds)	(662)		(1,035)
Blackfish, number 2/			
weight, kg 3/	104		
(pounds)	(230)		
TOTALS, kilograms	1,555	4,196	801
(pounds)	(3,429)	(9,251)	(1,765)
Fish Utilization Per Family, kilograms	120	323	62
(pounds)	(264)	(712)	(136)

1/ Expanded data.
2/ Measured in pounds or volume only.
3/ Estimated weights: whitefish = 1.27kg; Sheefis
pike = 0.90kg; burbot = 2.0

TABLE 4. NAPAKIAK SUBSISTENCE FISHERY UTILIZATION, 1967 -1968.

	1967		1968	
	1 May to 30 Sept	1 Oct to 31 Dec	1 Jan to 31 March	1 May to 30 Sept
Village Family Data				
Number of Families	49	49	49	49
Salmon fishing/sharing	48			48
Non-salmon fishing	1			1
Non-fish harvester	1	1	1	1
People per family	5.69			5.54
Dogs per family	5.73			5.73
Sno-gos per family	0.15			0.15
Fish Harvest				
King Salmon, number 1/	4,168			2,479
weight, kg	52,553			26,762
(pounds)	(115,870)			(59,000)
Small Salmon, number 1/	14,697			13,767
weight, kg	46,665			43,708
(pounds)	(102,879)			(107,393)
Whitefish, number	96	1,307	1,591	-
weight, kg 2/	122	2,295	2,021	
(pounds)	(269)	(5,060)	(4,455)	
Sheefish, number	45	189	92	-
weight, kg 2/	153	639	313	
(pounds)	(338)	(1,409)	(690)	
Pike, number	24	2,510	6,730	-
weight, kg 2/	22	2,259	6,057	
(pounds)	(48)	(4,980)	(13,353)	
Burbot, number	0	322	36	-
weight, kg 2/		657	79	
(pounds)		(1,448)	(172)	
Blackfish 3/				
weight, kg		469	68	
(pounds)		(1,034)	(150)	
TOTALS, kg	99,520	6,319	8,537	75,470
(pounds)	(219,404)	(13,931)	(18,821)	(166,393)
Fish Utilization Per Family, kilograms	2,031	129	174	1,540
(pounds)	(4,479)	(284)	(384)	(3,396)

1/ Expanded data.
2/ Estimated weights per fish: Whitefish = 1.27kg; Sheefish = 3.40kg; Pike = 0.90kg; Burbot = 2.04kg
3/ Measured in pounds or volume only.

TABLE 5. NAPAKIAK SUBSISTENCE FISHERY UTILIZATION, 1972.

	1 January to 31 May	1 June to 30 September
Village Family Data		
Number of Families	47	47
Salmon fishing/sharing		38
Non-salmon fishing	15	
Non-fish harvesters	8	8
People per family		5.80
Dogs per family		2.56
Sno-gos per family		1.14
Fish Harvest		
King Salmon, number 1/		2,022
Weight, kg		22,654
(pounds)		(49,943)
Small Salmon, number 1/		5,180
Weight, kg		15,272
(pounds)		(33,670)
Whitefish, number	1,057	156
Weight, kg 2/	1,342	198
(pounds)	(2,959)	(437)
Sheefish, number	52	27
Weight, kg 2/	177	92
(pounds)	(390)	(202)
Pike, number	495	1
Weight, kg 2/	446	1
(pounds)	(982)	(2)
Burbot, number	39	1
Weight, kg 2/	90	2
(pounds)	(175)	(4)
Blackfish 3/		
Weight, kg	116	0
(pounds)	(256)	0
Char, number	0	4
Weight, kg		4
(pounds)		(9)
TOTALS, kilograms	2,161	23,223
(pounds)	(4,764)	(84,267)
Fish Utilization Per Family		
kilograms	55	380
(pounds)	(128)	(2,161)

1/ Expanded Data.

2/ Estimated weights per fish: whitefish = 1.27kg; pike = 0.90kg; sheefish = 2.40; turbot = 2.04 kg

3/ Measured in pounds or volume only.

TABLE 6. ST. MARY'S FISHERY UTILIZATION, 1967 - 1968.

	1967		1968	
	1 June to 31 Aug	1 Sept to 31 Dec	1 Jan to 30 April	1 June to 31 Aug
Families, village data				
Number of Families	36	36	36	36
Salmon fishing/sharing	36			28
Non-salmon fishing	0			8
Non-fish harvester	0			5
People per family	7.66			7.16
Dogs per family	4.45			4.13
Sno-gos per family	0.45			0.65
FISH HARVEST				
King Salmon, number 1/	1,115	0	0	119
Weight, kg	12,138			1,430
(pounds)	26,760			3,154
Small Salmon, number 1/	10,655	116	0	6,509
Weight, kg	34,556	388		24,948
(pounds)	76,183	856		55,001
Whitefish, number	1,444	2,949	2,767	1,090
Weight, kg 3/	1,834	3,745	3,514	1,384
(pounds)	4,043	8,256	7,747	3,051
Sheefish, number	40	242	287	180
Weight, kg 3/	136	823	976	612
(pounds)	300	1,814	2,152	1,349
Pike, number	5	2,612	1,344	0
Weight, kg 3/	9	4,728	2,433	0
(pounds)	20	10,448	5,376	0
Burbot, number	0	498	1,602	0
Weight, kg 3/	0	2,032	6,536	0
(pounds)	0	4,482	14,418	0
Blackfish				
Weight, kg	0	213	23	0
(pounds)	0	470	50	0
Other freshwater fish 4/				
Weight, kg		116	4	0
(pounds)		256	9	0
TOTALS, kilograms	48,673	12,045	13,486	28,374
Fish Utilization per				
Family, kg	1,352	335	375	1,013
(pounds)	2,981	739	827	2,233

TABLE 6 (Continued)

1/ Expanded data.
2/ Measured in pounds or volume only.
3/ Estimated weights: whitefish 1.27kg; Sheefish 3.40kg; pike 1.81kg; burbot 4.08kg
4/ Other fish include grayling, char, tom cod, lamprey.

TABLE 7. RUSSIAN MISSION FISHERY UTILIZATION, 1972.

	1972	
	1 June to 30 September	1 October to 31 December
Families, village data		
Number of Families	26	26
Salmon fishing/sharing	15	15
Non-salmon fishing	11	11
Non-fish harvesters	7	7
People per Family	-	-
Dogs per Family 5/	2.87	-
Sno-gos per Family 5/	1.20	-
FISH HARVEST		
King Salmon, number 1/	914	0
Weight, kg	10,199	
(pounds)	(22,484)	
Small Salmon, number 1/	2,737	1
Weight, kg	8,628	4
(pounds)	(19,022)	(8)
Whitefish, number	-	238
Weight, kg 3/		302
(pounds)		(666)
Sheefish, number		66
Weight, kg 3/		224
(pounds)		(495)
Pike, Number		277
Weight, kg 3/		501
(pounds)		(1,105)
Burbot, number		49
Weight, kg 3/		200
(pounds)		(441)
Blackfish, kg 2/		64
(pounds)		(140)
Lamprey, number		12
Weight, kg 3/		3
(pounds)		6
TOTALS, kilograms	18,827	1,298
(pounds)	(41,506)	(2,861)
Fish utilization per Family		
kilograms	1,107	76
(pounds)	2,442	168

TABLE 7. (Continued)

1/ Expanded data.
2/ Measured in pounds or volume.
3/ Estimated weights: whitefish 1.27kg; Sheefish 3.40kg; pike 1.81kg; burbot 4.08kg.
5/ Fishing families only.

FIGURE 1.

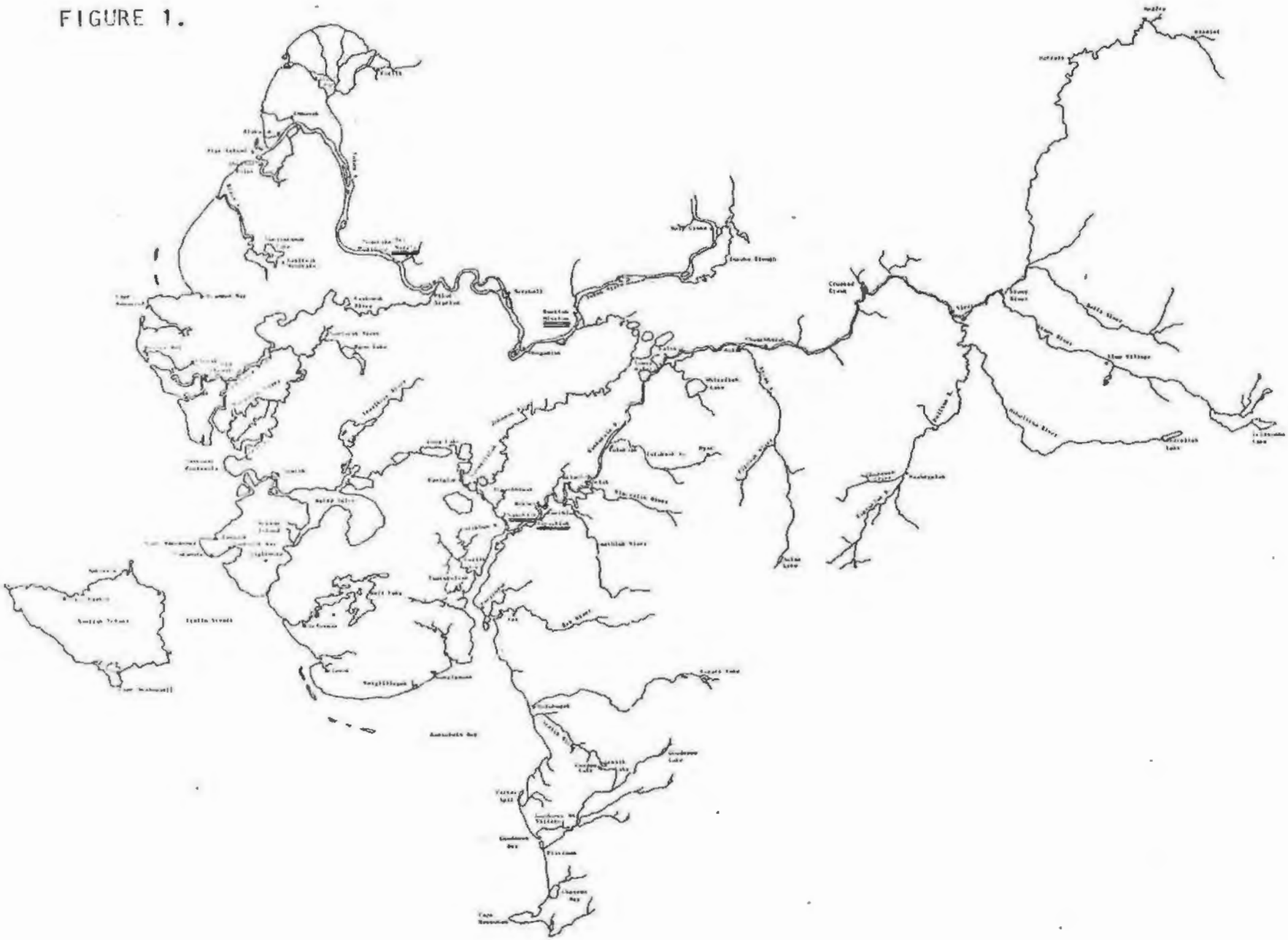


FIGURE 2. SUBSISTENCE CATCH CALENDAR.

SUBSISTENCE CATCH CALENDAR

JUNE 1973

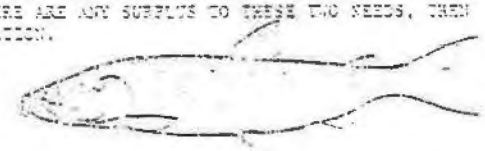
NOTE: DO NOT MARK IN FISH THAT ARE SOLD

FISHERMAN'S NAME_____

ADDRESS_____

Please mark in the number of each kind of fish caught each day. When you are through fishing drop the whole calendar in the Post Office. A stamp is not needed as the postage is paid by:

ALASKA DEPT. OF FISH AND GAME
BOX 90
BETHEL, ALASKA 99559

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
THE ALASKA DEPARTMENT OF FISH AND GAME HAS TO KNOW THE NUMBER OF FISH TAKEN BY THE PEOPLE. IT IS ONLY THROUGH THE USE OF CORRECTLY FILLED OUT CALENDARS THAT SOME OF THE INFORMATION NEEDED FOR THE ORDERLY MANAGEMENT OF THE FISHERY RESOURCE CAN BE OBTAINED. THERE HAS TO BE ENOUGH ESCAPEMENT OF SPAWNERS TO MAINTAIN THE FISH RUNS AND THERE HAS TO BE ENOUGH FISH AVAILABLE TO THE PEOPLE FOR SUBSISTENCE. IF THERE ARE ANY SURPLUS TO THESE TWO NEEDS, THEN THE SURPLUS CAN BE USED FOR COMMERCIAL UTILIZATION.  Sheefish					1 KING_____ DOG_____ WHITEFISH_____ SHEE_____	2 KING_____ DOG_____ WHITEFISH_____ SHEE_____
3 KING_____ DOG_____ WHITEFISH_____ SHEE_____	4 KING_____ DOG_____ WHITEFISH_____ SHEE_____	5 KING_____ DOG_____ WHITEFISH_____ SHEE_____	6 KING_____ DOG_____ WHITEFISH_____ SHEE_____	7 KING_____ DOG_____ WHITEFISH_____ SHEE_____	8 KING_____ DOG_____ WHITEFISH_____ SHEE_____	9 KING_____ DOG_____ WHITEFISH_____ SHEE_____
10 KING_____ DOG_____ WHITEFISH_____ SHEE_____	11 KING_____ DOG_____ WHITEFISH_____ SHEE_____	12 KING_____ DOG_____ WHITEFISH_____ SHEE_____	13 KING_____ DOG_____ WHITEFISH_____ SHEE_____	14 KING_____ DOG_____ WHITEFISH_____ SHEE_____	15 KING_____ DOG_____ WHITEFISH_____ SHEE_____	16 KING_____ DOG_____ WHITEFISH_____ SHEE_____
17 KING_____ DOG_____ WHITEFISH_____ SHEE_____	18 KING_____ DOG_____ WHITEFISH_____ SHEE_____	19 KING_____ DOG_____ WHITEFISH_____ SHEE_____	20 KING_____ DOG_____ WHITEFISH_____ SHEE_____	21 KING_____ DOG_____ WHITEFISH_____ SHEE_____	22 KING_____ DOG_____ WHITEFISH_____ SHEE_____	23 KING_____ DOG_____ WHITEFISH_____ SHEE_____
24 KING_____ DOG_____ WHITEFISH_____ SHEE_____	25 KING_____ DOG_____ WHITEFISH_____ SHEE_____	26 KING_____ DOG_____ WHITEFISH_____ SHEE_____	27 KING_____ DOG_____ WHITEFISH_____ SHEE_____	28 KING_____ DOG_____ WHITEFISH_____ SHEE_____	29 KING_____ DOG_____ WHITEFISH_____ SHEE_____	30 KING_____ DOG_____ WHITEFISH_____ SHEE_____

APPENDIX TABLE 1. KUSKOKWIM RIVER VILLAGE SUBSISTENCE SALMON HARVEST, 1960 - 1977.

Year	Fishing Families Surveyed	Average per family			King Salmon			Small Salmon 1/		
		People	Dogs	Sno-gos	No.	kg	lbs	No.	kg	lbs
1960	247	5.89	6.66	-	60	651	1,436	1,074	3,225	7,110
1961	342	6.02	6.33	-	39	424	934	453	1,357	2,992
1962	349	6.50	6.30	-	79	858	1,891	470	1,411	3,111
1963	410	6.14	5.29	-	87	945	2,083	351	1,054	2,324
1964	394	6.33	5.44	-	70	737	1,624	454	1,256	2,769
1965	332	5.95	5.45	-	64	630	1,389	669	2,003	4,415
1966	492	5.91	4.49	-	91	896	1,975	320	958	2,112
1967	472	6.36	5.22	.18	106	1,115	2,459	375	1,140	2,512
1968	567	6.23	5.31	.35	53	668	1,473	447	1,419	3,129
1969	376	6.49	5.51	.53	78	745	1,642	385	1,079	2,379
1970	514	6.33	4.65	.75	108	1,100	2,426	384	965	2,127
1971	483	6.53	4.30	1.01	88	1,046	2,306	238	691	1,523
1972	576	6.78	3.08	1.00	51	571	1,260	166	489	1,079
1973	408	6.55	3.84	1.48	81	981	2,163	356	1,098	2,421
1974	596	6.24	3.61	1.12	45	427	940	466	1,289	2,843
1975	437	6.41	3.99	1.35	79	670	1,477	310	942	2,077
1976	494	6.53	3.81	1.23	86	886	1,952	335	1,048	2,312
1977										

APPENDIX TABLE 2. YUKON DELTA VILLAGE SUBSISTENCE SALMON HARVEST, 1960 - 1977.

Year	Fishing Families Surveyed 1/	People	Dogs	Sno-gos	Averages per family: King Salmon No.	King Salmon kg	King Salmon pounds	Small Salmon No.	Small Salmon kg	Small Salmon pounds
1960										
1961	340	5.8	6.84	-	29	326	718	302	1,040	2,294
1962	326	5.9	6.34	-	12	133	294	330	1,134	2,500
1963	359	5.75	6.4	-	35	383	844	382	1,213	2,674
1964	384	6.2	6.3	-	15	155	341	358	1,292	2,849
1965	352	6.2	5.5	-	21	217	477	498	1,490	3,284
1966	310	6.4	4.4	-	20	208	460	228	710	1,569
1967	298	2/ (5.9)	3.97	.47	40	430	948	329	1,068	2,354
1968	321	(6.5)	3.82	.61	18	210	464	265	996	2,196
1969	316	(6.5)	3.60	.83	25	274	604	287	860	1,896
1970	272	(6.7)	3.68	.87	26	264	581	241	754	1,662
1971	267	(6.5)	2.36	1.09	43	442	974	192	578	1,275
1972	280	(6.3)	1.67	1.07	34	379	836	192	605	1,334
1973	306	(6.3)	1.77	1.02	35	392	863	175	586	1,293
1974	291	(6.3)	2.09	1.17	25	265	584	277	867	1,912
1975	279	(6.3)	2.20	1.12	26	256	565	198	628	1,385
1976	301	(6.3)	2.48	1.41	20	193	425	200	618	1,363
1977										

1/ Included are villages from the mouth of the Yukon River to Holy Cross.

2/ (Family size is for whole of the Yukon River drainage)